# SALARY PREDICTION USING POLYNOMIAL REGRESSION PROJECT REPORT

## Introduction

In this project, I focused on implementing Polynomial Regression, a powerful technique for modeling non-linear relationships between variables. The aim was to build a regression model that can accurately predict salaries based on different position levels in a company.

## Dataset and Implementation

The dataset used for this project is named "Position_Salaries.csv." It contains information about position levels and corresponding salaries for a company. The implementation of Polynomial Regression was carried out using Python programming language, along with popular libraries such as NumPy, Matplotlib, and pandas.

## Training the Linear Regression Model

To establish a baseline, I first trained a simple Linear Regression model using the entire dataset. This model serves as a reference for comparing the performance of the Polynomial Regression model.

## Training the Polynomial Regression Model

Next, I implemented Polynomial Regression by transforming the feature matrix (X) into a higher-degree polynomial feature matrix (X_poly) using the "PolynomialFeatures" class from scikit-learn. I chose a degree of 4 for the polynomial features, allowing the model to capture complex relationships between position levels and salaries.

## Visualizing the Results

I visualized the results of both the Linear Regression and Polynomial Regression models using Matplotlib. The scatter plot represents the actual data points, while the regression lines depict the predictions

made by each model. The Polynomial Regression curve illustrates a better fit to the data, capturing the non-linear patterns more accurately.

**Predicting New Results**

I tested the models' predictive capabilities by using them to predict the salary for a new position level, specifically 6.5. The Linear Regression model predicted a salary, and the Polynomial Regression model provided a more refined estimate.

**Conclusion**

The Polynomial Regression model outperformed the Linear Regression model, showcasing its ability to model non-linear relationships more effectively. This project demonstrates the utility of Polynomial Regression in capturing complex patterns and making accurate predictions.

This project could be used by the HR department of any firm to allocated right salary range to new recruits based on the position level without making mistakes.

Thank you for exploring the Polynomial Regression for Salary Prediction project! If you have any questions or feedback, feel free to reach out to me at osuolalefolarin@gmail.com

GitHub Repository: https://github.com/Folarinosuolale/Data-Science-Machine-Learning